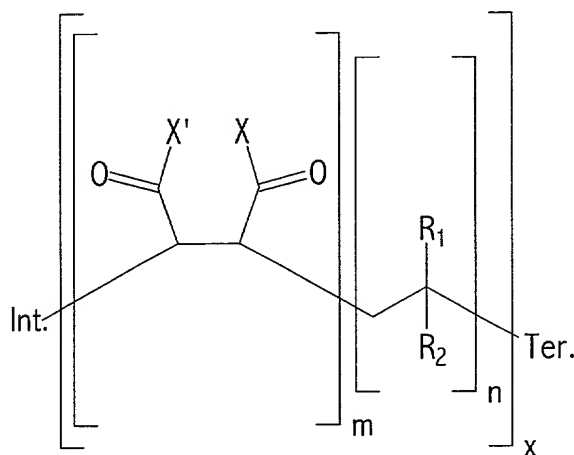


What is claimed is:

1. One or more copolymers having the general formula:



wherein:

$\text{X}$  and  $\text{X}'$  comprise one or more of  $\text{—OH}$ ;  $\text{—O—hydrocarbyl}$ ;  $\text{—NH}_2$ ;  $\text{—Cl}$ ;  $\text{—Br}$ ;  $\text{—OM}^+$ , wherein  $\text{M}^+$  comprises one equivalent of one or more metals, ammoniums and amine cations; and  $\text{X}$  and  $\text{X}'$  taken together as  $\text{—O—}$ ;

$n$  comprises a whole integer from 1 to 3;

$\text{R}_1$  comprises methyl;

$\text{R}_2$  comprises polyisobutyl having less than 32 carbon atoms;

$m$  comprises a whole integer of from 1 to 3;

$x$  comprises a whole integer of from 1 to 20;

Int. comprises at least one initiating radical; and

Ter. comprises at least one terminating group.

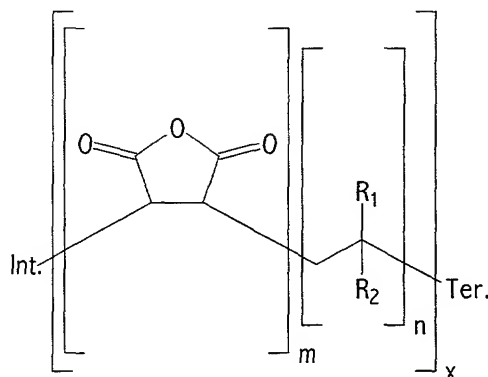
2. One or more copolymers of Claim 1, wherein one of  $\text{R}_1$  and  $\text{R}_2$  comprises methyl and the other of  $\text{R}_1$  and  $\text{R}_2$  comprises polyisobutyl having about 5 to about 25 carbon atoms.

- 1 3. One or more copolymers of Claim 1, wherein the copolymers are liquid  
2 at ambient temperature.  
3
- 4 4. One or more copolymers according to Claim 1, wherein the copolymers  
5 comprise one or more of an amide derivative, an ester derivative, an  
6 imide derivative and a metal salt derivative.  
7
- 8 5. One or more copolymers of Claim 1 having an average degree of  
9 polymerization of about 1.1 to about 20.  
10
- 11 6. One or more copolymers prepared by the polymerization of  
12  
13
  - 14 a. one or more unsaturated acidic reagents and
  - 15 b. one or more polyisobutenes having less than about 32 carbon
  - 16 atoms,
  - 17 c. in the presence of one or more free radical initiators.  
18
- 19 7. One or more copolymers of Claim 6 wherein the unsaturated acidic  
20 reagent comprises maleic anhydride.  
21
- 22 8. One or more copolymers of Claim 6, wherein the polyisobutene  
23 comprises a mixture further comprising:  
24
  - 25 a. about 5 wt. % to about 20 wt. %  $C_8H_{16}$ ,
  - 26 b. about 35 wt. % to about 55 wt. %  $C_{12}H_{24}$ ,
  - 27 c. about 20 wt. % to about 30 wt. %  $C_{16}H_{32}$ ,
  - 28 d. about 8 wt. % to about 15 wt. %  $C_{20}H_{40}$ ,
  - 29 e. about 2 wt % to about 8 wt %  $C_{24}H_{48}$ , and
  - 30 f. about 0.5 wt % to about 2 wt. %  $C_{28}H_{56}$ .  
31
- 32 9. One or more copolymers of Claim 6 having a number average  
33 molecular weight of about 231 to about 10,920.  
34

- 1 10. One or more copolymers of Claim 6 prepared from one or more  
2 polyisobutenes comprising a mixture having a number average  
3 molecular weight ( $M_n$ ) of about 150 to about 240.  
4
- 5 11. A method for making the copolymer of Claim 1 comprising reacting one  
6 or more unsaturated acidic reagents with one or more polyisobutenes  
7 having less than about 32 carbon atoms in the presence of one or  
8 more free radical initiators.  
9
- 10 12. A method of Claim 11, wherein the unsaturated acidic reagent  
11 comprises maleic anhydride.  
12
- 13 13. A method for making one or more copolymers of Claim 1 comprising a  
14 first step of reacting a first amount of one or more unsaturated acidic  
15 reagents with a first amount of one or more polyisobutenes having less  
16 than about 32 carbon atoms in the presence of a first amount of one or  
17 more free radical initiators to form a first liquid copolymer and a  
18 second step of reacting a portion of the first liquid copolymer with a  
19 second amount of unsaturated acidic reagent, a second amount of  
20 polyisobutene having less than about 32 carbon atoms in the presence  
21 of a second amount of free radical initiator.

1

2 14. One or more copolymers having the general formula:



3

4

5 wherein:

6 n comprises a whole integer from 1 to 3;

7 R<sub>1</sub> comprises methyl;8 R<sub>2</sub> comprises one or more polyisobutyls having less than 32 carbon  
9 atoms;

10 m comprises a whole integer of from 1 to 3;

11 x comprises a whole integer of from 1 to 20;

12 Int. comprises one or more initiating radicals; and

13 Ter. comprises one or more terminating groups.

14

15 15. One or more copolymers of Claim 14, wherein one of R<sub>1</sub> and  
16 R<sub>2</sub> comprises methyl and the other of R<sub>1</sub> and R<sub>2</sub> comprises polyisobutyl  
17 having about 5 to about 25 carbon atoms.

18

19 16. One or more copolymers of Claim 14, wherein the copolymer is liquid  
20 at ambient temperature.

21

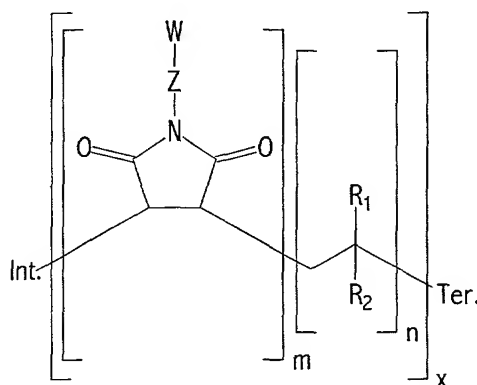
22 17. A method for making one or more copolymers of Claim 14 comprising  
23 reacting maleic anhydride with polyisobutene having less than about  
24 28 carbon atoms in the presence of free radical initiator.

25

- 1 18. One or more copolymers of Claim 14 having an average degree of  
2 polymerization of about 1.1 to about 20.  
3
- 4 19. One or more copolymers of Claim 14 having an average degree of  
5 polymerization of about 1.5 to about 10.  
6
- 7 20. A method for making the copolymers of Claim 14 comprising reacting  
8 maleic anhydride with one or more polyisobutenes having less than  
9 about 32 carbon atoms in the presence of one or more free radical  
10 initiators.  
11
- 12 21. The method of Claim 19 wherein the polyisobutene comprises:  
13
  - 14 a. about 5 wt. % to about 20 wt. %  $C_8H_{16}$ ,
  - 15 b. about 35 wt. % to about 55 wt. %  $C_{12}H_{24}$ ,
  - 16 c. about 20 wt. % to about 30 wt. %  $C_{16}H_{32}$ ,
  - 17 d. about 8 wt. % to about 15 wt. %  $C_{20}H_{40}$ ,
  - 18 e. about 2 wt % to about 8 wt %  $C_{24}H_{48}$ , and
  - 19 f. about 0.5 wt % to about 2 wt. %  $C_{28}H_{56}$ .  
20
- 21 22. One or more copolymers of Claim 14 having a number average  
22 molecular weight of about 231 to about 10,920.  
23
- 24 23. A method of Claim 20, wherein the polyisobutene has a number  
25 average molecular weight ( $M_n$ ) of about 150 to about 240.  
26
- 27 24. A method for making one or more copolymer comprising reacting  
28 polyisobutene having less than about 32 carbon atoms with maleic  
29 anhydride in the presence of one or more free radical initiators and one  
30 or more copolymers of Claim 14.  
31
- 32 25. A method for making one or more copolymers of Claim 14 comprising a  
33 first step of reacting a first amount of maleic anhydride with a first  
34 amount of one or more polyisobutenes having less than about

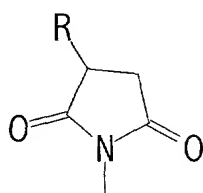
32 carbon atoms in the presence of a first amount of one or more free radical initiators to form a first liquid copolymer and a second step of reacting a portion of the first liquid copolymer with a second amount of maleic anhydride and a second amount of one or more polyisobutenes having less than about 32 carbon atoms in the presence of a second amount of one or more free radical initiators.

26. One or more polymers having the general formula of:

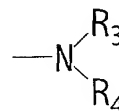


wherein:

W comprises one or more of:



and



wherein:

R comprises at least one of one or more polyalkyls and one or more polyalkenes, wherein the polyalkyls and polyalkenes each have a molecular weight of at least 1000;

R<sub>1</sub> comprises methyl;

R<sub>2</sub> comprises polyisobutyl having less than 32 carbon atoms;

Z comprises a polyamine linking radical

1 m comprises a whole integer of from 1 to 3;  
 2 n comprises a whole integer of from 1 to 3;  
 3 x comprises a whole integer of from 1 to 20;  
 4 Int. comprises one or more initiating radicals;  
 5 Ter. comprises one or more terminating groups; and  
 6 wherein R<sub>3</sub> and R<sub>4</sub> are independently hydrogen, alkyl, phenyl, or taken  
 7 together are alkylene to give a ring group.  
 8

- 9 27. A lubricating oil composition comprising a major amount of an oil of  
 10 lubricating viscosity and a minor amount of one or more of the  
 11 polymers of Claim 26.  
 12
- 13 28. A lubricating oil concentrate comprising from about 10 wt.% to about  
 14 90 wt.% of the polymer of Claim 26 and from about 90 wt.% to about  
 15 10 wt.% of an oil of lubricating viscosity.  
 16
- 17 29. A fuel concentrate comprising a major amount of an inert stable  
 18 oleophilic organic solvent boiling in the range of about 150 degrees F.  
 19 to about 400 degrees F. and a minor amount of the polymer of  
 20 Claim 26.  
 21
- 22 30. One or more post-treated dispersants prepared by treating one or  
 23 more polymers of Claim 26 with one or more cyclic carbonate or one  
 24 or more linear mono- or poly-carbonate under reactive conditions.  
 25
- 26 31. The post-treated dispersants of Claim 30 wherein said cyclic carbonate  
 27 is ethylene carbonate.  
 28
- 29 32. A lubricating oil composition comprising a major amount of an oil of  
 30 lubricating viscosity and a minor amount of the dispersant of Claim 30.  
 31
- 32 33. A lubricating oil concentrate comprising from about 10 wt.% to about  
 33 90 wt.% of the post-treated dispersant of Claim 30 and from about  
 34 90 wt.% to about 10 wt.% of an oil of lubricating viscosity.

- 1
- 2 34. One or more post-treated dispersants prepared by treating the
- 3 polymers of Claim 26 under reactive conditions with one or more of
- 4 boron oxide, boron halide, boric acid, and esters of boric acid.
- 5
- 6 35. A process for preparing one or more succinimides that comprises
- 7 reacting a mixture under reactive conditions, wherein the mixture
- 8 comprises:
- 9
- 10 a. one or more of at least one alkenyl acid derivative and at least
- 11 one alkylsuccinic acid derivative,
- 12 b. one or more copolymers prepared by the process of Claim 11
- 13 and
- 14 c. one or more polyamines.
- 15
- 16 36. A process for preparing one or more succinimides of Claim 35, wherein
- 17 the acid derivative has a succination ratio of from about 1.1 to about
- 18 1.4.
- 19
- 20 37. One or more succinimides prepared by reacting a mixture under
- 21 reactive conditions wherein the mixture comprises:
- 22
- 23 a. one or more of an alkenyl acid derivative and an alkylsuccinic
- 24 acid derivative,
- 25 b. one or more copolymers of
- 26 (1) one or more unsaturated acidic reagents and
- 27 (2) one or more polyisobutenes having less than about
- 28 32 carbon atoms, and
- 29 c. one or more polyamine.
- 30
- 31 38. One or more succinimides of Claim 37, wherein the acid derivatives
- 32 have a succination ratio of about from about 1.1 to about 1.4.
- 33



- 1 39. One or more succinimides of Claim 37, wherein the unsaturated acidic  
2 reagent comprises maleic anhydride.  
3
- 4 40. A lubricating oil composition comprising a major amount of an oil of  
5 lubricating viscosity and a minor amount of the succinimide of  
6 Claim 37.  
7
- 8 41. A lubricating oil concentrate comprising from about 10 wt.% to about  
9 90 wt.% of the succinimide of Claim 37 and from about 90 wt.% to  
10 about 10 wt.% of an oil of lubricating viscosity.  
11
- 12 42. A fuel concentrate comprising a major amount of an inert stable  
13 oleophilic organic solvent boiling in the range of about 150 degrees F.  
14 to about 400 degrees F. and a minor amount of the succinimide of  
15 Claim 37.  
16
- 17 43. One or more post-treated succinimides prepared by treating one or  
18 more succinimides of Claim 37 under reactive conditions with one or  
19 more of linear mono- carbonate and poly-carbonate.  
20
- 21 44. The post-treated succinimide of Claim 43, wherein the carbonate  
22 comprises ethylene carbonate.  
23
- 24 45. A lubricating oil comprising a major amount of an oil of lubricating  
25 viscosity and a minor amount of the post-treated succinimide of  
26 Claim 43.  
27
- 28 46. A lubricating oil concentrate comprising from about 10 wt.% to about  
29 90 wt.% of the post-treated succinimide of Claim 43 and from about  
30 90 wt.% to about 10 wt.% of an oil of lubricating viscosity.  
31
- 32 47. A fuel concentrate comprising a major amount of an inert stable  
33 oleophilic organic solvent boiling in the range of about 150 degrees F.

- 1 to about 400 degrees F. and a minor amount of the post-treated
- 2 succinimide of Claim 43.
- 3
- 4 48. One or more post-treated succinimides prepared by treating the
- 5 succinimides of Claim 37 under reactive conditions with one or more of
- 6 boron oxide, boron halide, boric acid, and esters of boric acid.
- 7
- 8 49. A lubricating oil comprising a major amount of an oil of lubricating
- 9 viscosity and a minor amount of the post-treated succinimide of
- 10 Claim 48.
- 11
- 12 50. A fuel concentrate comprising a major amount of an inert stable
- 13 oleophilic organic solvent boiling in the range of about 150 degrees F.
- 14 to about 400 degrees F. and a minor amount of the post-treated
- 15 succinimide of Claim 48.